REMARKS

Applicant and the undersigned would like to thank the Examiner for his efforts in the examination of this application. Reconsideration is respectfully requested.

I. Rejection of Claims 4, 5, and 8-10 under 35 USC 102(b)

The Examiner has maintained his rejection of Claims 4, 5, and 8-10 under 35 USC 102(b) as being anticipated by Bille et al. (U.S. Pat. No. 4,907,586).

This rejection is respectfully traversed. Claims 4 and 9 recite the step of: "spacing the center point of the first laser shot apart from the center point of the second laser shot so that any plume of ablated material caused by the first laser shot will not substantially interfere with the second laser shot's ablation of the corneal surface". Claim 5 recites the step of: "applying a pattern of laser beam shots to the corneal surface area in a pattern, the pattern sufficient to locate the center point of each laser shot apart in time or distance from the center point of a previous laser shot so that any plume of ablated material caused by the previous laser shot will not substantially interfere with any subsequent laser shot's ablation of the corneal surface." Claims 8 and 10 recite the step of: "spacing the first laser shot apart in time from the second laser shot so that any plume of ablated material caused by the first laser shot will not substantially interfere with the second laser shot's ablation of the corneal surface".

The Examiner is requested to note col. 9, lines 22-45 of Bille '586, wherein it is taught that the ultrashort duration (10 psec) of the laser shots effectively eliminates the plume problem: "Specifically, because emissions **10** have such a short duration, any interaction they might have had with debris that is dispelled from the tissue during photoablation is effectively

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avoided.... The shorter duration emissions in the quasi-continuous beam, however, allow them to modify the tissue before the debris is ejected from the site." In addition, Bille '586 teaches that "the longer pulses of other presently used lasers are not so efficient."

Therefore, Bille '586 does not teach the physical spreading of the shot pattern in order to eliminate the plume effect. In fact, Bille '586 teaches that with ultrashort pulses the plume effect is negligible.

In addition, Bille '586 also teaches away from the present invention at col. 10, lines 13-15: "the Excimer laser leaves irregularities which present depth variations in surface **48** that are on the order of 0.5 microns.... It has been determined that craters **50** of this size cause hazy vision for a patient." Rather, Bille '586 teach the use of wavelengths of 526 (in the visible range), and 1053 and 2940 nm (in the infrared), the latter two causing heating, which is believed to cause the need for ultrashort pulses.

Claims 4, 5, and 8-10 have been amended to more particularly point out a distinction from Bille '586 in the preferred use of an excimer laser in the present invention. Support for this addition may be found in the Specification at page 12, lines 5-7.

Thus Claims 4, 5, and 8-10 are believed to patentably define over the cited art.

II. Rejection of Claims 1-3, 6, and 7 under 35 USC 103(a)

The Examiner has rejected Claims 1-3, 6, and 7 under 35 USC 103(a) as being obvious over Bille '586 in combination with Warner et al. (U.S. Pat. No. 4,903,695).

This rejection is respectfully traversed. Claim 1 recites the step of: "spacing the center point of each laser shot apart in time or distance from the center point of a previous laser shot

so that any plume of ablated material caused by the previous laser shot will not substantially interfere with any subsequent laser shot's ablation of the corneal surface". Claim 2 recites the steps of: "spacing the center point of the first laser shot apart from the center point of the second laser shot so that any plume of ablated material caused by the first laser shot will not substantially interfere with the second laser shot's ablation of the corneal surface" and "spacing the center point of the third laser shot apart from the center points of the first laser shot and the second laser shot so that any plume of ablated material caused by the first laser shot or by the second laser shot will not substantially interfere with the third laser shot's ablation of the corneal surface". Claim 3 recites the step of: "spacing the center point of each laser shot apart in time or distance from the center point of a previous laser shot so that any plume of ablated material caused by the previous laser shot will not substantially interfere with any subsequent laser shot's ablation of the corneal surface". Claims 6 and 7 recite the step of: "spacing the first laser shot apart in time from the second laser shot so that any plume of ablated material caused by the first laser shot will not substantially interfere with the second laser shot's ablation of the corneal surface".

As stated above, Bille '586 discloses that the ultrashort duration (10 psec) of the laser shots effectively eliminates the plume problem and that "the longer pulses of other presently used lasers are not so efficient." Again, therefore, Bille '586 does not teach the physical spreading of the shot pattern in order to eliminate the plume effect. In fact, Bille '586 teaches that with ultrashort pulses the plume effect is negligible.

In addition, Bille '586 also teaches away from the present invention in the discussion of purported drawbacks of excimer lasers.

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Claims 1-3, 6, and 7 have also been amended to more particularly point out a distinction from Bille '586 in the preferred use of an excimer laser in the present invention.

Therefore, it is believed that Claims 1-3, 6, and 7 patentably define over the cited art.

III. Terminal Disclaimer

The Examiner is incorrect in stating that the "person signing does not have power of attorney". A Power of Attorney and Revocation of Previous Powers has now been submitted twice, once in original form on December 21, 2000, and again with the previous Amendment of September 12, 2002. Another copy is enclosed herewith. The Examiner is therefore respectfully requested to recognize this document and admit the previously filed Terminal Disclaimer.

IV. New Claims 11-21

New Claims 11-21, dependent, respectively, from Claims 1-10, have been submitted to more particularly point out that which Applicants regard as their invention. In each of these claims, it is recited that each of the laser shots has a pulse duration of approximately 50 nanoseconds, and a pulse rate of approximately 4 kHz. Support for this matter is to be found in the Specification at page 12, line 7, and page 14, line 2.

CONCLUSIONS

Applicant respectfully submits that the above amendments place this application in a condition for allowance, and passage to issue is respectfully solicited. The Applicant and the

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undersigned would like to again thank the Examiner for his efforts in the examination of this application and for reconsideration of the claims as amended in light of the arguments presented. If the further prosecution of the application can be facilitated through telephone interview between the Examiner and the undersigned, the Examiner is requested to telephone the undersigned at the Examiner's convenience.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that the foregoing is being deposited with the United States Postal Service as first class mail in an envelope addressed to the Commissioner of Patents, Washington D.C. 20231, this 4th day of February, 2003.

Edward Bradley

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Please amend Claims 1-10 and enter new Claims 11-20 as follows:

1. **(amended)** A method for correcting vision, comprising the steps of:

a. selecting an eye for treatment;

b. creating a surface flap of corneal tissue and folding the surface flap aside to expose a corneal surface having a corneal surface area;

c. applying at least a first excimer laser shot and a second excimer laser shot to the corneal surface area, each of the laser shots spaced apart from each other and having,

i) a wavelength sufficient to cause ablation of the corneal surface,

ii) a center point and an area less than the corneal surface area;

d. spacing the center point of the first laser shot apart from the center point of the second laser shot so that any plume of ablated material caused by the first laser shot will not substantially interfere with the second laser shot's ablation of the corneal surface; and

e. repeating steps c and d a sufficient number of times to effect a desired vision correction for the selected eye.

2. **(amended)** A method for correcting vision, comprising the steps of:

a. selecting an eye for treatment;

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b. creating a surface flap of corneal tissue and folding the surface flap aside to expose a corneal surface having a corneal surface area;

c. applying at least a first excimer laser shot, a second excimer laser shot and a third laser shot to the corneal surface area, each of the laser shots spaced apart from each other and having,

i) a wavelength sufficient to cause ablation of the corneal surface,

ii) a center point and an area less than the corneal surface area;

d. spacing the center point of the first laser shot apart from the center point of the second laser shot so that any plume of ablated material caused by the first laser shot will not substantially interfere with the second laser shot's ablation of the corneal surface;

e. spacing the center point of the third laser shot apart from the center points of the first laser shot and the second laser shot so that any plume of ablated material caused by the first laser shot or by the second laser shot will not substantially interfere with the third laser shot's ablation of the corneal surface;

f. repeating steps c, d and e a sufficient number of times to effect a desired vision correction for the selected eye.

3. **(amended)** A method for correcting vision, comprising the steps of:

a. selecting an eye for treatment;

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b. creating a surface flap of corneal tissue and folding the surface flap aside to expose a corneal surface having a corneal surface area;

c. applying a plurality of excimer laser shots to the corneal surface area, each of the laser shots spaced apart from each other and having,

i) a wavelength sufficient to cause ablation of the corneal surface,

ii) a center point and an area less than the corneal surface area;

d. spacing the center point of each laser shot apart in time or distance from the center point of a previous laser shot so that any plume of ablated material caused by the previous laser shot will not substantially interfere with any subsequent laser shot's ablation of the corneal surface; and

e. repeating steps c and d a sufficient number of times to effect a desired vision correction for the selected eye.

4. **(amended)** A method for correcting vision, comprising the steps of:

a. selecting a corneal surface area of an eye for treatment;

b. applying at least a first excimer laser shot and a second excimer laser shot to the corneal surface area, each of the laser shots spaced apart from each other and having,

i) a wavelength sufficient to cause ablation of the corneal surface,

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ii) a center point and an area less than the corneal surface area;

c. spacing the center point of the first laser shot apart from the center point of the second laser shot so that any plume of ablated material caused by the first laser shot will not substantially interfere with the second laser shot's ablation of the corneal surface; and

d. repeating steps b and c a sufficient number of times to effect a desired vision correction for the selected eye.

5. **(amended)** A method for correcting vision, comprising the steps of:

a. selecting a corneal surface area of an eye for treatment, the corneal surface area being either an external surface of the eye or an exposed internal surface of the eye; and

b. applying a plurality of excimer laser beam shots to the corneal surface area in a pattern, the pattern sufficient to locate the center point of each laser shot apart in time or distance from the center point of a previous laser shot so that any plume of ablated material caused by the previous laser shot will not substantially interfere with any subsequent laser shot's ablation of the corneal surface.

6. **(amended)** A method for correcting vision, comprising the steps of:

a. selecting an eye for treatment;

b. creating a surface flap of corneal tissue and folding the surface flap aside to expose a corneal surface having a corneal surface area;

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c. applying at least a first excimer laser shot and a second excimer laser shot to the corneal surface area, each of the laser shots spaced apart from each other in time and distance and having,

i) a wavelength sufficient to cause ablation of the corneal surface,

ii) an area less than the corneal surface area;

d. spacing the first laser shot apart in time from the second laser shot so that any plume of ablated material caused by the first laser shot will not substantially interfere with the second laser shot's ablation of the corneal surface; and

e. repeating steps c and d a sufficient number of times to effect a desired vision correction for the selected eye.

7. **(amended)** A method for correcting vision, comprising the steps of:

a. selecting an eye for treatment;

b. creating a surface flap of corneal tissue and folding the surface flap aside to expose a corneal surface having a corneal surface area;

c. applying at least a first excimer laser shot, a second excimer laser shot and a third excimer laser shot to the corneal surface area, each of the laser shots spaced apart from each other in time and distance and having,

i) a wavelength sufficient to cause ablation of the corneal surface,

ii) an area less than the corneal surface area;

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d. spacing the first laser shot apart in time from the second laser shot so that any plume of ablated material caused by the first laser shot will not substantially interfere with the second laser shot's ablation of the corneal surface;

e. spacing the third laser shot apart in time from the first laser shot and the second laser shot so that any plume of ablated material caused by the first laser shot or by the second laser shot will not substantially interfere with the third laser shot's ablation of the corneal surface;

f. repeating steps c, d and e a sufficient number of times to effect a desired vision correction for the selected eye.

8. **(amended)** A method for correcting vision, comprising the steps of:

a. selecting a corneal surface area of an eye for treatment;

b. applying at least a first excimer laser shot and a second excimer laser shot to the corneal surface area, each of the laser shots spaced apart from each other in time and distance and having,

i) a wavelength sufficient to cause ablation of the corneal surface,

ii) an area less than the corneal surface area;

c. spacing the first laser shot apart in time from the second laser shot so that any plume of ablated material caused by the first laser shot will not substantially interfere with the second laser shot's ablation of the corneal surface; and

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d. repeating steps b and c a sufficient number of times to effect a desired vision correction for the selected eye.

9. **(amended)** A method for correcting vision, comprising the steps of:

a. selecting a corneal surface area of an eye for treatment, the corneal surface area being either an external surface of the eye or an exposed internal surface of the eye;

b. applying at least a first excimer laser shot, a second excimer laser shot and a third excimer laser shot to the corneal surface area, each of the laser shots spaced apart from each other and having,

i) a wavelength sufficient to cause ablation of the corneal surface,

ii) a center point and an area less than the corneal surface area;

c. spacing the center point of the first laser shot apart from the center point of the second laser shot so that any plume of ablated material caused by the first laser shot will not substantially interfere with the second laser shot's ablation of the corneal surface;

d. spacing the center point of the third laser shot apart from the center points of the first laser shot and the second laser shot so that any plume of ablated material caused by the first laser shot or by the second laser shot will not substantially interfere with the third laser shot's ablation of the corneal surface;

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e. repeating steps b, c and d a sufficient number of times to effect a desired vision correction for the selected eye.

10. **(amended)** A method for correcting vision, comprising the steps of:

a. selecting a corneal surface area of an eye for treatment, the corneal surface area being either an external surface of the eye or an exposed internal surface of the eye;

b. applying at least a first excimer laser shot, a second excimer laser shot and a third excimer laser shot to the corneal surface area, each of the laser shots spaced apart from each other in distance and time and having,

i) a wavelength sufficient to cause ablation of the corneal surface,

ii) an area less than the corneal surface area;

c. spacing the first laser shot apart in time from the second laser shot so that any plume of ablated material caused by the first laser shot will not substantially interfere with the second laser shot's ablation of the corneal surface;

d. spacing the third laser shot apart in time from the first laser shot and the second laser shot so that any plume of ablated material caused by the first laser shot or by the second laser shot will not substantially interfere with the third laser shot's ablation of the corneal surface;

e. repeating steps b, c and d a sufficient number of times to effect a desired vision correction for the selected eye.

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11. The method recited in Claim 1, wherein the first and the second laser shot each has a pulse duration of approximately 50 nanoseconds, and a pulse rate of approximately 4 kHz.

12. The method recited in Claim 2, wherein the first, the second, and the third laser shot each has a pulse duration of approximately 50 nanoseconds, and a pulse rate of approximately 4 kHz.

13. The method recited in Claim 3, wherein each of the plurality of laser shots has a pulse duration of approximately 50 nanoseconds, and a pulse rate of approximately 4 kHz.

14. The method recited in Claim 4, wherein the first and the second laser shot each has a pulse duration of approximately 50 nanoseconds, and a pulse rate of approximately 4 kHz.

15. The method recited in Claim 5, wherein each of the plurality of laser shots has a pulse duration of approximately 50 nanoseconds, and a pulse rate of approximately 4 kHz.

16. The method recited in Claim 6, wherein the first and the second laser shot each has a pulse duration of approximately 50 nanoseconds, and a pulse rate of approximately 4 kHz.

17. The method recited in Claim 7, wherein the first, the second, and the third laser shot each has a pulse duration of approximately 50 nanoseconds, and a pulse rate of approximately 4 kHz.

18. The method recited in Claim 8, wherein the first and the second laser shot each has a pulse duration of approximately 50 nanoseconds, and a pulse rate of approximately 4 kHz.

19. The method recited in Claim 9, wherein the first, the second, and the third laser shot each has a pulse duration of approximately 50 nanoseconds, and a pulse rate of approximately 4 kHz.

20. The method recited in Claim 10, wherein the first, the second, and the third laser shot each has a pulse duration of approximately 50 nanoseconds, and a pulse rate of approximately 4 kHz.

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